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10/538,448

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Thomas Netsch

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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BRIARCLIFF MANOR, NY 10510

EXAMINER

MEHTA, PARIKHA SOLANKI

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3737

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,448	Applicant(s) NETSCH ET AL.	
	Examiner PARIKHA S. MEHTA	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 5 and 7 are rejected under 35 USC 101 as being directed to non-statutory subject matter. The USPTO is obliged to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO (*In re Zletz*, 893 F.2d 319 (Fed. Cir. 1989)). The broadest reasonable interpretation of a claim drawn to a computer readable medium covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of "computer readable media", particularly when the specification is silent (MPEP § 2111.01). When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim is rejected under 35 U.S.C. § 101 as covering non-statutory subject matter (*In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007); *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. 101*, Aug 24, 2009 p. 2). As the present claims do not specify whether the CRM is, the claims include within their scope subject matter which is not eligible for patent under 35 U.S.C. § 101.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4 and 15-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1-4 and 15-19 recite the first and second current and earlier reference slice images as being differently oriented by a preset angular offset. The pending specification neither discloses an offset nor describes any other feature which reasonably corresponds to a "preset" offset. Accordingly, a skilled artisan would not be reasonably apprised of how to make and use the offset, and would thus not be enabled to make and use the invention.

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5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 recites the method as further including images. It is unclear how a group of method steps can be modified to include an image.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 4-13, 15-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art.

Regarding claims 1 and 5, Applicant admits that computerized methods are known in the art for making current reference slice images, determining a geometrical transformation by which the current reference slice images are brought into agreement with earlier reference slice images, calculating current imaging parameters by transforming earlier image parameters, and making a current diagnostic slice

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image via the current imaging parameters, wherein "brought into agreement" is interpreted to constitute making the relative positions and orientations of both reference image types agree in three dimensions (Specification as originally filed, p. 1 line 27 - p. 2 line 11). The admitted prior art does not teach that the reference slice images are differently oriented by a preset angular offset. As applicant has not disclosed that such preset angular offset solves a particular problem or presents a patentable advantage over the prior art, it would have been nothing more than an obvious matter of design choice for a skilled artisan to have chosen reference images having a preset angular offset to achieve the claimed invention (*In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)).

Regarding claims 6, 8, 10, 12 and 16, Applicant admits that the prior art teaches systems comprising image-making means, a computer that operates the image-making means, the computer being programmed to receive earlier reference slice images, make current reference images, calculate a geometric transform that transforms the earlier and current reference slice images into alignment with each other, operating on the earlier imaging parameters to generate current imaging parameters, and controlling the image-making means to generate a diagnostic slice image using the current image parameters (Specification as originally filed, p. 1 line 27 - p. 2 line 11). Although the admitted prior art is silent with respect to the relative orientation of the images, it would have been an obvious matter of design choice for a skilled artisan to have chosen non-parallel reference images. Applicant also admits that the systems of the prior art generate earlier and current reference images having a resolution that is different along each of the two orthogonal directions (Specification as originally filed p. 2 lines 15-17).

Regarding claims 7 and 11, the admitted prior art does not expressly teach the system as being programmed to calculate the geometric transform as a rigid or affine transformation defined by a set of transformation parameters determined automatically by a suitable algorithm which optimizes a measure that represents a similarity of the current reference slice images to the earlier reference slice images. The admitted prior art does separately teach rigid and affine transformations (see for example p. 8 of the Maintz reference, cited at p. 2 of the Specification). Applicant further admits that algorithms for computing transformation parameters by optimization of similarity are known in the art (Specification p. 4 lines 16-21). It would have been obvious to one of ordinary skill in the art at the time of invention to have combined the admitted prior art system of claims 6 and 10 with the admitted known elements for rigid and affine transformation, as well as the admitted known optimization algorithms to thereby yield the claimed invention, as such a modification requires nothing more than the mere combination of known prior art elements to yield predictable results, which has previously been held as obvious and unpatentable (*KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

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Regarding claims 4 and 13, any slice image of the human body, as disclosed in the admitted prior art, inherently has a specific orientation relative to (i.e., "in") a head-foot direction, an anterior-posterior direction, and a right-left direction. As such, the admitted prior art meets the claim.

Regarding claims 5, 9, 15 and 16, Applicant has not disclosed that orthogonal reference slices (i.e., the current and earlier slice images having an offset of 90 degrees and being oriented in different ones of the claimed directions, which is obvious as previously discussed for claims 4 and 13) solve a particular problem or present a patentable advantage over the prior art. As such, it would have been an obvious matter of design choice for a skilled artisan to have chosen reference slices which are orthogonal to yield the claimed invention.

Regarding claims 17 and 19, it has previously been held that the mere duplication of prior art parts or steps (i.e., the addition of third current and reference slice images, which are operated upon in the same manner as the first and second sets of images) is obvious and unpatentable absent any evidence that such duplication presents any patentable significance over the prior art (*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)).

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art as applied to claim 1, further in view of Grimson (US Patent No. 5,531,520), hereinafter Grimson ('520), of record.

The admitted prior art does not teach identification of reference points. In the same field of endeavor, Grimson ('520) teaches the geometrical transformation as including identification of reference points in the current slice images that agree with reference points in the earlier slice images (col. 6 lines 41-54). Grimson ('520) further teaches the geometrical transformation to be a rigid transformation defined by a set of transformation parameters calculated by an optimization algorithm (Fig. 2, col. 6 lines 17-41). It would have been obvious to a skilled artisan to have used the geometrical transformation of Grimson ('520) as the generalized transformation admitted to be known in the art, as such a modification requires nothing more than the mere combination of known prior art steps to yield predictable results, which has previously been held as obvious and unpatentable (*KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art as applied to claim 1, further in view of Oldroyd (US Patent No. 6,738,532), hereinafter Oldroyd ('532).

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The admitted prior art does not expressly teach the first earlier and current reference slice images as having a different resolution than that of the second earlier and current reference slice images. In the same problem solving area of image registration, Oldroyd ('532) teaches a method of image registration for images having different resolution (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the admitted prior art to include steps of registering images having different resolutions according to Oldroyd ('532) in order to, for example, be able to combine images generated by different devices and thereby augment the versatility of the prior art method.

Response to Amendments and Arguments

12. Applicant's amendments of 12 May 2010 are effective to overcome the previous rejection of claims 1-4 and 15 under 35 U.S.C. 101, which is hereby vacated accordingly. Claims 5 and 7 remain deficient as previously discussed. Applicant is advised to amend the claim to recite "non-transitory" in place of "tangible" to cure the deficiency.

13. Applicant's arguments of 12 May 2010 with respect to the rejection of claims 1-4 and 15 under 35 U.S.C. 112, first paragraph, have been fully considered but are unpersuasive. The mere recitation "brought into agreement", contrary to what Applicant suggests (Remarks p. 8), is not an enabling description of how to make and use a "preset angular offset". Accordingly, the rejection is maintained and reiterated herein, and new claims 16-19 are similarly rejected in view of their dependence from claim 1.

14. Applicant's arguments of 12 May 2010 with respect to the prior rejection of claims 1-13 and 15 have been considered but are moot in view of the new ground(s) of rejection presented herein.

Examiner maintains that merely deleting matter from the specification does not remove it from the record as admitted prior art, and as such the specification as originally filed remains a proper basis upon which the prior art rejection is formed herein and in previous Office Actions. Applicant's attempts to construe the deleted matter as expressly describing only Fitzpatrick and Maintz (Remarks p. 9) are ineffective; the passage relied upon as admitted prior art describes what was known generally, and then only references Fitzpatrick and Maintz as examples of such teachings, not as the only sources of such information. Examiner reproduces the pertinent portion of the original specification below, with

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emphasis added to illustrate that Applicant did not disclose the known teachings as being derived only from Fitzpatrick and Maintz:

"When diagnostic slice images are made as a repetitive process, it is crucial that the position and orientation in three dimensions, relative to the part of the patient's body that is being examined, of the slice images made at different times or under different modalities should agree as closely as possible so that, for example, the advance of the condition can be accurately observed. For this purpose, it is usual for reference slice images of the part of the body to be made before the actual diagnostic slice image is made. By calculating a geometrical transformation, it is possible for a fresh, current reference slice image that is made to be brought into congruence with earlier reference slice images. The method that is required for this purpose is a method of optimization in which the sets of image data for the reference slice images made at different times are brought into agreement. From the geometrical transformation that is calculated, transformation parameters are obtained that are taken as a basis for calculating current imaging parameters. For diagnostic slice images, the current imaging parameters are then used to enable the image planes of the diagnostic slice images to be set repeatably (see for example J.M. Fitzpatrick...[and] J.B. Maintz..."

Accordingly, the passage is fairly interpreted as a description of what Applicant considered to be known in the art at the time of invention, i.e. that which Applicant himself did not invent. As such, the passage remains valid prior art against which the pending claims are rejected, as reiterated herein. Again, it is unclear upon what legal basis Applicant relies to substantiate the allegation that retraction of an original passage of the specification effectively removes it as prior art (Remarks p. 9), so, contrary to Applicant's glib assertions, the primary reference (i.e., the admitted prior art) is not at all removed by such retraction. The lengthy discussion of the purported novelty of the claimed invention presented at pages 9-11 of the Remarks does nothing to patentably distinguish what is claimed over what was admitted to be prior art by the Applicant.

Regarding Applicant's allegations that the specification sufficiently shows a patentable advantage to the claimed preset angular offset at pages 2 lines 12-21, page 2 lines 22-26, page 3 lines 1-19 and page 4 lines 27-28 (Remarks p. 12), such passages have been carefully considered but are not found to expressly describe any such advantage. At page 3 lines 12-21 and 22-26, the disclosure merely discusses the general purpose of the claimed invention, along with broad suggestions as to its novelty, without any mention of an advantage for the claimed preset angular offset. The passage of page 3 lines 1-19 discusses image planes being "differently oriented", but again lacks any explicit showing of an advantage to the

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claimed offset. The passage of page 4 lines 27-28 is concerned with imaging times, and is completely silent with respect to any offset. Accordingly, Examiner's characterization of the claimed offset as being unpatentably obvious in light of Applicant's failure to present it in any terms which would even suggest it as having a patentable advantage is, in fact, proper.

Regarding the previous rejection of claim 5, the claimed "preset angular offset" and the implicitly claimed offset of 90 degrees ("perpendicular") were both clearly discussed as obvious and unpatentable on the same basis of rejection. For clarity, claim 5 is now also included with the heading of the rejection of claim 15.

Regarding claim 6, Applicant purports that the Examiner characterizes the admitted prior art as generating reference images along each of two different orthogonal directions. It appears Applicant has misread the rejection. For Applicant's convenience, Examiner respectfully reproduces the pertinent portion of the rejection below, with emphasis added for clarity:

*"Applicant also admits that the systems of the prior art generate earlier and current reference images **having a resolution that is different along each of the two orthogonal directions.**"*

It is clear that the Examiner did in fact correctly characterize the admission as describing a difference of resolution along orthogonal directions. As applicant has not disclosed the non-parallel orientation of the images as solving a particular problem, presenting a patentable advantage over the prior art, or as otherwise being significant to the structure of the claimed invention, the rejection of such limitation as being an obvious matter of design choice is proper (*In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Similar arguments apply to Applicant's rebuttal of the rejection of claim 10.

Regarding the rejection of claims 4 and 13, Applicant states that Examiner's characterization of any image having an orientation relative to a head-foot, anterior-posterior and/or left-right direction does not agree with the claims which recite the reference slice images as being "in" such directions. As a preliminary matter, the terms "head-foot", "anterior-posterior" and "left-right" are all relative directions that can be arbitrarily assigned. Furthermore, so long as the image depicts a portion of the body that occupies space that would intersect with a theoretical line drawn, for example, from head to foot, it can be said to be "in" that direction. Accordingly, the rejection is proper.

As Applicant's arguments are wholly unpersuasive for at least the foregoing reasons, all pending claims remain rejected as unpatentable over the prior art as detailed herein.

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Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit
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/Parikha S Mehta/

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